partial plan may be approved and supplemented from time to time. The operator/lessee shall not, however, perform any operation except under an approved plan.

§ 3592.2 Maps of underground workings and surface operations.

Maps of underground workings and surface operations shall be drawn to a scale acceptable to the authorized officer. All maps shall be appropriately marked with reference to Government land marks or lines and elevations with reference to sea level. When required by the authorized officer, vertical projections and cross sections shall accompany plan views. Maps shall be based on accurate surveys and certified by a professional engineer, professional land surveyor or other professionally qualified person. Accurate copies of such maps or reproductive material or prints thereof shall be furnished by the operator to the authorized officer when and as required.

§ 3592.3 Production maps.

(a) The operator shall prepare maps which show mineral production from the leased lands. All excavations in each separate bed or deposit shall be shown in such a manner that the production of minerals for any royalty period can be accurately ascertained. Maps submitted for in situ or solution mining shall show pipelines, meter locations, or other points of measurement necessary for production verification. Production maps shall be submitted to the authorized officer at the end of each royalty reporting period or on a schedule determined by the authorized officer. As appropriate or required by the authorized officer, production maps also shall show surface boundaries, lease boundaries and topography, including subsidence resulting from mining activities.

(b) In the event of failure of the operator to furnish the maps required by this section, the authorized officer shall employ a licensed mine surveyor to make a survey and maps of the mine, and the cost thereof shall be charged to and promptly paid by the operator/lessee.

(c) If the authorized officer believes any map submitted by an operator/lessee is incorrect, the authorized officer may cause a survey to be made, and if the survey shows the map submitted by the operator/lessee to be substantially incorrect in whole or in part, the cost of making the survey and preparing the map shall be charged to and promptly paid by the operator/lessee.

Subpart 3593—Bore Holes and Samples

§ 3593.1 Core or test hole cores, samples, cuttings.

(a) The operator/lessee shall submit promptly to the authorized officer a signed copy of records of all core or test holes made on the lands covered by the lease, license or permit. The records shall be in a form that will allow the position and direction of the holes to be located on a map. The records shall include a log of all strata penetrated and conditions encountered, such as water, gas or unusual conditions. Copies of analysis of all samples shall be transmitted to the authorized officer as soon as obtained or as requested by the authorized officer. The operator/lessee shall furnish the authorized officer a detailed lithologic log of each drill hole and all other in-hole surveys or other logs produced. The core from test holes shall be retained by the operator/lessee for 1 year or such other period as may be directed by the authorized officer, and shall be available for inspection by the authorized officer. The authorized officer may cut such cores and receive samples as appropriate. Upon the request of the authorized officer, the operator/lessee shall furnish samples of strata, drill cuttings and mill products.

(b) Surface drill holes for development or holes for prospecting shall be abandoned to the satisfaction of the authorized officer by cementing and/or casing or by other methods approved in advance by the authorized officer and in a manner to protect the surface and not endanger any present or future underground operation or any deposit of oil, gas, other mineral substances or aquifer.

(c) Logs and analyses of development holes shall not be required unless specifically requested by the authorized officer. Drill holes may be converted to